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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/578,632	05/09/2006	Rohit Garg	US030481US2	1427

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EXAMINER

REARDON, ROCHELLE D

ART UNIT	PAPER NUMBER
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3737

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/578,632	Applicant(s) GARG ET AL.	
	Examiner ROCHELLE REARDON	Art Unit 3737	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 September 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-11 and 13-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-11 and 13-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claims 1, 3-9, 11 and 14-18 are objected to because of the following informalities: claim 1, "the region of interest" in line 3 lacks antecedent basis. Claims 11 and 14-18 fail to set forth any further structural limitation. Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 3, 4, 10, 11, 13-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 3, the step of acquiring a parametric image lacks antecedent basis. Claim 4, it is unclear as to whether the contrast agent set forth in line 2 is the same or different from the harmonic contrast agent set forth in line 7 of claim 1. Claim 10 recites the limitation "the source" in line 12. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 1, 3-11 and 13-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schwartz (5,720,291) in view of Averkiou et al (6,171,246).

Regarding claims 1, 3, 4, 10, 11 and 14-19, Schwartz discloses a method of simultaneously displaying a two or three dimensional parametric perfusion image and an anatomical structural image of the region of interest corresponding to the parametric perfusion image on an ultrasonic image display, comprising: an image processor and acquiring an anatomical structural image of a region of interest of a subject comprising tissue containing blood flow; and displaying the parametric perfusion image in anatomical registration with the anatomical structural image (abstract; col.2, ll.9-24), wherein the relative opacity of the registered parametric image and anatomical structural image is variable over a range of relative opacities (col.3, ll.43-49); a display coupled to the source of images and the parametric perfusion image processor; a display processor coupled to the display; and a user control coupled to the display processor; and wherein the user control further comprises a plurality of separate user

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controls by which a user can set the opacity of the parametric image and the registered diagnostic image (col.2, ll.9-24; col.3, ll.43-49, ll.62-65; col.4, ll.58-61; claim 17).

Schwartz fails to disclose a contrast signal processor; a parametric perfusion image processor and acquiring harmonic signal components from a harmonic contrast agent in the region of interest of the subject; and processing harmonic signal components of corresponding locations in a sequence of images to form a parametric image of a perfusion characteristic of the tissue of the region of interest.

However, Averkiou et al teach in the same medical field of endeavor, acquiring harmonic signal components from a harmonic contrast agent in the region of interest of the subject; and processing harmonic signal components of corresponding locations in a sequence of images to form a parametric image of a perfusion characteristic of the tissue of the region of interest (abstract; col.1, ll.9-28; col.2, ll.8-32).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of registering an anatomical structural image and a parametric perfusion image with acquiring and processing harmonic signal components. Doing so would provide enhanced imaging of perfused tissue.

Regarding claims 5 and 6, Schwartz discloses the invention substantially as claimed but fails to disclose varying the relative opacity of the registered parametric image and anatomical flow image in a continuous manner as well as in a stepwise manner.

However, Schwartz teaches a user entering rendering parameters by means of a user interface in which each type of image information will be processed including opacity values (col.4, ll.51-65).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the user control of Schwartz to include varying the relative opacity of the registered parametric image and anatomical flow image in a continuous manner as well as in a stepwise manner. Doing so would provide viewing of characteristic of both parametric and anatomical flow images, or at varying opacities as desired.

Regarding claims 7-9, Schwartz discloses wherein varying the relative opacity further comprises varying the opacity within a range extending from an opaque anatomical image and a transparent parametric image; to an opaque anatomical image overlaid with an opaque parametric image; to a transparent anatomical image and an opaque parametric image; and within a range which includes an opacity setting in which a translucent parametric image is shown in registration with a substantially opaque anatomical image (col.3, ll.44-47; col.4, ll.63-65).

Regarding claim 13, Schwartz discloses the invention substantially as claimed but fails to disclose wherein the display processor further comprises an opacity processor which acts to set the relative opacity of the registered diagnostic image and parametric image within a range varying from an opaque diagnostic image and a transparent parametric image; to an opaque diagnostic image overlaid with an opaque parametric image; to a transparent diagnostic image and an opaque parametric image;

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and a user can set the relative opacity of the images to one of a discrete number of relative opacity settings.

However, Schwartz teaches the user ability to enter values for the opacity and contrast to be imparted to each type of image information (col.4, ll.58-60).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify display processor of Schwartz to include an opacity processor. Doing so would provide the ability to make automatic changes in opacity of the data types in order to enhance data contrast.

Response to Arguments

Applicant's arguments filed September 25th, 2009 have been fully considered but they are not persuasive. Claims 11 and 14-18 are objected to as failing to set forth any further structural limitation. The claims merely describe characteristics of the images, as well as setting a relative opacity of the images, and do not set forth any further structure. Regarding claims 1, 3-4, 10 and 11, the recitation of displaying a two or three dimensional image does not require both two dimensional and three dimensional imaging. Schwartz fails to disclose perfusion imaging, as well as the use of harmonic signal components from a harmonic contrast agent; however, Averkiou et al teach in the same medical field of endeavor, acquiring harmonic signal components from a harmonic contrast agent in the region of interest of the subject; and processing harmonic signal components of corresponding locations in a sequence of images to form a parametric image of a perfusion characteristic of the tissue of the region of interest (abstract; col.1, ll.9-28; col.2, ll.8-32).

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ROCHELLE REARDON whose telephone number is (571)270-7104. The examiner can normally be reached on Monday thru Friday, 9:00 A.M. to 5:00 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Casler can be reached on (571)272-4956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ROCHELLE REARDON/
Examiner, Art Unit 3737

/Ruth S. Smith/
Primary Examiner, Art Unit 3737